



SEQUENCE LISTING

<110> Glass, David J.
Karow, Margaret
Smith, Eric

<120> HIV-Specific Fusion Proteins and
Therapeutic and Diagnostic Methods For Use

<130> REG 990A

<140> 10/768,932
<141> 2004-01-30

<150> US 60/446,347
<151> 2003-02-10

<160> 18

<170> FastSEQ for Windows Version 4.0

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<211> 446
<212> PRT
<213> Artificial Sequence

<220>

<223> Synthetic

<400> 1
Asp Tyr Gln Val Ser Ser Pro Ile Tyr Asp Ile Asn Tyr Tyr Thr Ser
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Glu Pro Ser Gln Lys Ile Asn Val Lys Gln Ile Ala Ala Arg Leu Leu
20 25 30
Thr Arg Gly Gly Ala Ile Ala Lys Lys Val Val Leu Gly Lys Lys Gly
35 40 45
Asp Thr Val Glu Leu Thr Cys Thr Ala Ser Gln Lys Lys Ser Ile Gln
50 55 60
Phe His Trp Lys Asn Ser Asn Gln Ile Lys Ile Leu Gly Asn Gln Gly
65 70 75 80
Ser Phe Leu Thr Lys Gly Pro Ser Lys Leu Asn Asp Arg Ala Asp Ser
85 90 95
Arg Arg Ser Leu Trp Asp Gln Gly Asn Phe Pro Leu Ile Ile Lys Asn
100 105 110
Leu Lys Ile Glu Asp Ser Asp Thr Tyr Ile Cys Glu Val Glu Asp Gln
115 120 125
Lys Glu Glu Val Gln Leu Leu Val Phe Gly Leu Thr Ala Asn Ser Asp
130 135 140
Thr His Leu Leu Gln Gly Gln Ser Leu Thr Leu Thr Leu Glu Ser Pro
145 150 155 160
Pro Gly Ser Ser Pro Ser Val Gln Cys Arg Ser Pro Arg Gly Lys Asn
165 170 175
Ile Gln Gly Gly Lys Thr Leu Ser Val Ser Gln Leu Glu Leu Gln Asp
180 185 190
Ser Gly Thr Trp Thr Cys Thr Val Leu Gln Asn Gln Lys Lys Val Glu

195	200	205
Phe Lys Ile Asp Ile Val Val	Leu Ala Ser Gly Asp	Lys Thr His Thr
210	215	220
Cys Pro Pro Cys Pro Ala Pro	Glu Leu Leu Gly Gly	Pro Ser Val Phe
225	230	235
Leu Phe Pro Pro Lys Pro	Asp Thr Leu Met Ile Ser Arg	Thr Pro
245	250	255
Glu Val Thr Cys Val Val Asp Val	Ser His Glu Asp Pro	Glu Val
260	265	270
Lys Phe Asn Trp Tyr Val Asp Gly	Val Glu Val His Asn Ala	Lys Thr
275	280	285
Lys Pro Arg Glu Glu Gln Tyr	Asn Ser Thr Tyr Arg	Val Val Ser Val
290	295	300
Leu Thr Val Leu His Gln Asp Trp	Leu Asn Gly Lys Glu Tyr	Lys Cys
305	310	315
Lys Val Ser Asn Lys Ala Leu Pro	Ala Pro Ile Glu Lys Thr	Ile Ser
325	330	335
Lys Ala Lys Gly Gln Pro Arg	Glu Pro Gln Val Tyr Thr	Leu Pro Pro
340	345	350
Ser Arg Asp Glu Leu Thr Lys	Asn Gln Val Ser Leu Thr	Cys Leu Val
355	360	365
Lys Gly Phe Tyr Pro Ser Asp	Ile Ala Val Glu Trp Glu	Ser Asn Gly
370	375	380
Gln Pro Glu Asn Asn Tyr	Lys Thr Thr Pro Pro	Val Leu Asp Ser Asp
385	390	395
Gly Ser Phe Phe Leu Tyr Ser	Lys Leu Thr Val Asp Lys	Ser Arg Trp
405	410	415
Gln Gln Gly Asn Val Phe Ser	Cys Ser Val Met His Glu	Ala Leu His
420	425	430
Asn His Tyr Thr Gln Lys Ser	Leu Ser Leu Ser Pro	Gly Lys
435	440	445

<210> 2
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 <213> Artificial Sequence

<220>
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Arg Ser Thr Arg Gly Gly	Ala Ile Ala Lys Lys	Val Val Leu Gly Lys
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15		
Lys Gly Asp Thr Val Glu	Leu Thr Cys Thr Ala Ser	Gln Lys Lys Ser
20	25	30
Ile Gln Phe His Trp Lys	Asn Ser Gln Ile Lys	Ile Leu Gly Asn
35	40	45
Gln Gly Ser Phe Leu Thr	Lys Gly Pro Ser Lys	Leu Asn Asp Arg Ala
50	55	60
Asp Ser Arg Arg Ser	Leu Trp Asp Gln Gly	Asn Phe Pro Leu Ile Ile
65	70	75
80		
Lys Asn Leu Lys Ile	Glu Asp Ser Asp	Thr Tyr Ile Cys Glu Val Glu
85	90	95
Asp Gln Lys Glu Glu	Val Gln Leu Leu Val	Phe Gly Leu Thr Ala Asn
100	105	110
Ser Asp Thr His	Leu Leu Gln Gly	Gln Ser Leu Thr Leu Thr Leu Glu

115	120	125
Ser Pro Pro Gly Ser Ser Pro Ser Val Gln Cys Arg Ser Pro Arg Gly		
130	135	140
Lys Asn Ile Gln Gly Gly Lys Thr Leu Ser Val Ser Gln Leu Glu Leu		
145	150	155
Gln Asp Ser Gly Thr Trp Thr Cys Thr Val Leu Gln Asn Gln Lys Lys		
165	170	175
Val Glu Phe Lys Ile Asp Ile Val Val Leu Ala Thr Arg Asp Tyr Gln		
180	185	190
Val Ser Ser Pro Ile Tyr Asp Ile Asn Tyr Tyr Thr Ser Glu Pro Ser		
195	200	205
Gln Lys Ile Asn Val Lys Gln Ile Ala Ala Arg Leu Leu Ser Gly Asp		
210	215	220
Lys Thr His Thr Cys Pro Pro Cys Pro Ala Pro Glu Leu Leu Gly Gly		
225	230	235
Pro Ser Val Phe Leu Phe Pro Pro Lys Pro Lys Asp Thr Leu Met Ile		
245	250	255
Ser Arg Thr Pro Glu Val Thr Cys Val Val Val Asp Val Ser His Glu		
260	265	270
Asp Pro Glu Val Lys Phe Asn Trp Tyr Val Asp Gly Val Glu Val His		
275	280	285
Asn Ala Lys Thr Lys Pro Arg Glu Glu Gln Tyr Asn Ser Thr Tyr Arg		
290	295	300
Val Val Ser Val Leu Thr Val Leu His Gln Asp Trp Leu Asn Gly Lys		
305	310	315
Glu Tyr Lys Cys Lys Val Ser Asn Lys Ala Leu Pro Ala Pro Ile Glu		
325	330	335
Lys Thr Ile Ser Lys Ala Lys Gly Gln Pro Arg Glu Pro Gln Val Tyr		
340	345	350
Thr Leu Pro Pro Ser Arg Asp Glu Leu Thr Lys Asn Gln Val Ser Leu		
355	360	365
Thr Cys Leu Val Lys Gly Phe Tyr Pro Ser Asp Ile Ala Val Glu Trp		
370	375	380
Glu Ser Asn Gly Gln Pro Glu Asn Asn Tyr Lys Thr Thr Pro Pro Val		
385	390	395
Leu Asp Ser Asp Gly Ser Phe Phe Leu Tyr Ser Lys Leu Thr Val Asp		
405	410	415
Lys Ser Arg Trp Gln Gln Gly Asn Val Phe Ser Cys Ser Val Met His		
420	425	430
Glu Ala Leu His Asn His Tyr Thr Gln Lys Ser Leu Ser Leu Ser Pro		
435	440	445
Gly Lys		
450		

<210> 3
 <211> 436
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Synthetic

<400> 3
 Asp Tyr Gln Val Ser Ser Pro Ile Tyr Asp Ile Asn Tyr Tyr Thr Ser
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 Glu Pro Ser Gln Lys Ile Asn Val Lys Gln Ile Ala Ala Arg Leu Leu

20	25	30
Thr Arg Gly Gly Ala Ile Ala	Thr Val Glu Leu Thr Cys	Thr Ala Ser
35	40	45
Gln Lys Lys Ser Ile Gln Phe His Trp Lys Asn Ser Asn Gln Ile Lys		
50	55	60
Ile Leu Gly Asn Gln Gly Ser Phe Leu Thr Lys Gly Pro Ser Lys Leu		
65	70	75
Asn Asp Arg Ala Asp Ser Arg Arg Ser Leu Trp Asp Gln Gly Asn Phe		
85	90	95
Pro Leu Ile Ile Lys Asn Leu Lys Ile Glu Asp Ser Asp Thr Tyr Ile		
100	105	110
Cys Glu Val Glu Asp Gln Lys Glu Glu Val Gln Leu Leu Val Phe Gly		
115	120	125
Leu Thr Ala Asn Ser Asp Thr His Leu Leu Gln Gly Gln Ser Leu Thr		
130	135	140
Leu Thr Leu Glu Ser Pro Pro Gly Ser Ser Pro Ser Val Gln Cys Arg		
145	150	155
Ser Pro Arg Gly Lys Asn Ile Gln Gly Gly Lys Thr Leu Ser Val Ser		
165	170	175
Gln Leu Glu Leu Gln Asp Ser Gly Thr Trp Thr Cys Thr Val Leu Gln		
180	185	190
Asn Gln Lys Lys Val Glu Phe Lys Ile Asp Ile Val Val Leu Ala Ser		
195	200	205
Gly Asp Lys Thr His Thr Cys Pro Pro Cys Pro Ala Pro Glu Leu Leu		
210	215	220
Gly Gly Pro Ser Val Phe Leu Phe Pro Pro Lys Pro Lys Asp Thr Leu		
225	230	235
Met Ile Ser Arg Thr Pro Glu Val Thr Cys Val Val Val Asp Val Ser		
245	250	255
His Glu Asp Pro Glu Val Lys Phe Asn Trp Tyr Val Asp Gly Val Glu		
260	265	270
Val His Asn Ala Lys Thr Lys Pro Arg Glu Glu Gln Tyr Asn Ser Thr		
275	280	285
Tyr Arg Val Val Ser Val Leu Thr Val Leu His Gln Asp Trp Leu Asn		
290	295	300
Gly Lys Glu Tyr Lys Cys Lys Val Ser Asn Lys Ala Leu Pro Ala Pro		
305	310	315
Ile Glu Lys Thr Ile Ser Lys Ala Lys Gly Gln Pro Arg Glu Pro Gln		
325	330	335
Val Tyr Thr Leu Pro Pro Ser Arg Asp Glu Leu Thr Lys Asn Gln Val		
340	345	350
Ser Leu Thr Cys Leu Val Lys Gly Phe Tyr Pro Ser Asp Ile Ala Val		
355	360	365
Glu Trp Glu Ser Asn Gly Gln Pro Glu Asn Asn Tyr Lys Thr Thr Pro		
370	375	380
Pro Val Leu Asp Ser Asp Gly Ser Phe Phe Leu Tyr Ser Lys Leu Thr		
385	390	395
Val Asp Lys Ser Arg Trp Gln Gln Gly Asn Val Phe Ser Cys Ser Val		
405	410	415
Met His Glu Ala Leu His Asn His Tyr Thr Gln Lys Ser Leu Ser Leu		
420	425	430
Ser Pro Gly Lys		
435		

<210> 4

<211> 621

<212> PRT

<213> Artificial Sequence

<220>

<223> Synthetic

<400> 4

Asp	Tyr	Gln	Val	Ser	Ser	Pro	Ile	Tyr	Asp	Ile	Asn	Tyr	Tyr	Thr	Ser	
1																15
Glu	Pro	Ser	Gln	Lys	Ile	Asn	Val	Lys	Gln	Ile	Ala	Ala	Arg	Leu	Leu	
																30
Thr	Arg	Gly	Gly	Ala	Ile	Ala	Lys	Lys	Val	Val	Leu	Gly	Lys	Lys	Gly	
																45
Asp	Thr	Val	Glu	Leu	Thr	Cys	Thr	Ala	Ser	Gln	Lys	Lys	Ser	Ile	Gln	
																60
Phe	His	Trp	Lys	Asn	Ser	Asn	Gln	Ile	Lys	Ile	Leu	Gly	Asn	Gln	Gly	
																80
Ser	Phe	Leu	Thr	Lys	Gly	Pro	Ser	Lys	Leu	Asn	Asp	Arg	Ala	Asp	Ser	
																95
Arg	Arg	Ser	Leu	Trp	Asp	Gln	Gly	Asn	Phe	Pro	Leu	Ile	Ile	Lys	Asn	
																110
Leu	Lys	Ile	Glu	Asp	Ser	Asp	Thr	Tyr	Ile	Cys	Glu	Val	Glu	Asp	Gln	
																125
Lys	Glu	Glu	Val	Gln	Leu	Leu	Val	Phe	Gly	Leu	Thr	Ala	Asn	Ser	Asp	
																140
Thr	His	Leu	Leu	Gln	Gly	Gln	Ser	Leu	Thr	Leu	Thr	Leu	Glu	Ser	Pro	
																160
Pro	Gly	Ser	Ser	Pro	Ser	Val	Gln	Cys	Arg	Ser	Pro	Arg	Gly	Lys	Asn	
																175
Ile	Gln	Gly	Gly	Lys	Thr	Leu	Ser	Val	Ser	Gln	Leu	Glu	Leu	Gln	Asp	
																190
Ser	Gly	Thr	Trp	Thr	Cys	Thr	Val	Leu	Gln	Asn	Gln	Lys	Lys	Val	Glu	
																205
Phe	Lys	Ile	Asp	Ile	Val	Val	Leu	Ala	Ser	Gly	Phe	Gln	Lys	Ala	Ser	
																220
Ser	Ile	Val	Tyr	Lys	Lys	Glu	Gly	Glu	Gln	Val	Glu	Phe	Ser	Phe	Pro	
																240
Leu	Ala	Phe	Thr	Val	Glu	Lys	Leu	Thr	Gly	Ser	Gly	Glu	Leu	Trp	Trp	
																255
Gln	Ala	Glu	Arg	Ala	Ser	Ser	Ser	Lys	Ser	Trp	Ile	Thr	Phe	Asp	Leu	
																270
Lys	Asn	Lys	Glu	Val	Ser	Val	Lys	Arg	Val	Thr	Gln	Asp	Pro	Lys	Leu	
																285
Gln	Met	Gly	Lys	Lys	Leu	Pro	Leu	His	Leu	Thr	Leu	Pro	Gln	Ala	Leu	
																300
Pro	Gln	Tyr	Ala	Gly	Ser	Gly	Asn	Leu	Thr	Leu	Ala	Leu	Glu	Ala	Lys	
																320
Thr	Gly	Lys	Leu	His	Gln	Glu	Val	Asn	Leu	Val	Val	Met	Arg	Ala	Thr	
																335
Gln	Leu	Gln	Lys	Asn	Leu	Thr	Cys	Glu	Val	Trp	Gly	Pro	Thr	Ser	Pro	
																350
Lys	Leu	Met	Leu	Ser	Leu	Lys	Leu	Glu	Asn	Lys	Glu	Ala	Lys	Val	Ser	
																365
Lys	Arg	Glu	Lys	Ala	Val	Trp	Val	Leu	Asn	Pro	Glu	Ala	Gly	Met	Trp	
																380
Gln	Cys	Leu	Leu	Ser	Asp	Gly	Ala	Ser	Gly	Asp	Lys	Thr	His	Thr	Cys	
																400

Pro Pro Cys Pro Ala Pro Glu Leu Leu Gly Gly Pro Ser Val Phe Leu
 405 410 415
 Phe Pro Pro Lys Pro Lys Asp Thr Leu Met Ile Ser Arg Thr Pro Glu
 420 425 430
 Val Thr Cys Val Val Val Asp Val Ser His Glu Asp Pro Glu Val Lys
 435 440 445
 Phe Asn Trp Tyr Val Asp Gly Val Glu Val His Asn Ala Lys Thr Lys
 450 455 460
 Pro Arg Glu Glu Gln Tyr Asn Ser Thr Tyr Arg Val Val Ser Val Leu
 465 470 475 480
 Thr Val Leu His Gln Asp Trp Leu Asn Gly Lys Glu Tyr Lys Cys Lys
 485 490 495
 Val Ser Asn Lys Ala Leu Pro Ala Pro Ile Glu Lys Thr Ile Ser Lys
 500 505 510
 Ala Lys Gly Gln Pro Arg Glu Pro Gln Val Tyr Thr Leu Pro Pro Ser
 515 520 525
 Arg Asp Glu Leu Thr Lys Asn Gln Val Ser Leu Thr Cys Leu Val Lys
 530 535 540
 Gly Phe Tyr Pro Ser Asp Ile Ala Val Glu Trp Glu Ser Asn Gly Gln
 545 550 555 560
 Pro Glu Asn Asn Tyr Lys Thr Thr Pro Pro Val Leu Asp Ser Asp Gly
 565 570 575
 Ser Phe Phe Leu Tyr Ser Lys Leu Thr Val Asp Lys Ser Arg Trp Gln
 580 585 590
 Gln Gly Asn Val Phe Ser Cys Ser Val Met His Glu Ala Leu His Asn
 595 600 605
 His Tyr Thr Gln Lys Ser Leu Ser Leu Ser Pro Gly Lys
 610 615 620

<210> 5
 <211> 611
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Synthetic

<400> 5
 Asp Tyr Gln Val Ser Ser Pro Ile Tyr Asp Ile Asn Tyr Tyr Thr Ser
 1 5 10 15
 Glu Pro Ser Gln Lys Ile Asn Val Lys Gln Ile Ala Ala Arg Leu Leu
 20 25 30
 Thr Arg Gly Gly Ala Ile Ala Thr Val Glu Leu Thr Cys Thr Ala Ser
 35 40 45
 Gln Lys Lys Ser Ile Gln Phe His Trp Lys Asn Ser Asn Gln Ile Lys
 50 55 60
 Ile Leu Gly Asn Gln Gly Ser Phe Leu Thr Lys Gly Pro Ser Lys Leu
 65 70 75 80
 Asn Asp Arg Ala Asp Ser Arg Arg Ser Leu Trp Asp Gln Gly Asn Phe
 85 90 95
 Pro Leu Ile Ile Lys Asn Leu Lys Ile Glu Asp Ser Asp Thr Tyr Ile
 100 105 110
 Cys Glu Val Glu Asp Gln Lys Glu Glu Val Gln Leu Leu Val Phe Gly
 115 120 125
 Leu Thr Ala Asn Ser Asp Thr His Leu Leu Gln Gly Gln Ser Leu Thr
 130 135 140

Leu Thr Leu Glu Ser Pro Pro Gly Ser Ser Pro Ser Val Gln Cys Arg
 145 150 155 160
 Ser Pro Arg Gly Lys Asn Ile Gln Gly Gly Lys Thr Leu Ser Val Ser
 165 170 175
 Gln Leu Glu Leu Gln Asp Ser Gly Thr Trp Thr Cys Thr Val Leu Gln
 180 185 190
 Asn Gln Lys Val Glu Phe Lys Ile Asp Ile Val Val Leu Ala Ser
 195 200 205
 Gly Phe Gln Lys Ala Ser Ser Ile Val Tyr Lys Lys Glu Gly Glu Gln
 210 215 220
 Val Glu Phe Ser Phe Pro Leu Ala Phe Thr Val Glu Lys Leu Thr Gly
 225 230 235 240
 Ser Gly Glu Leu Trp Trp Gln Ala Glu Arg Ala Ser Ser Ser Lys Ser
 245 250 255
 Trp Ile Thr Phe Asp Leu Lys Asn Lys Glu Val Ser Val Lys Arg Val
 260 265 270
 Thr Gln Asp Pro Lys Leu Gln Met Gly Lys Lys Leu Pro Leu His Leu
 275 280 285
 Thr Leu Pro Gln Ala Leu Pro Gln Tyr Ala Gly Ser Gly Asn Leu Thr
 290 295 300
 Leu Ala Leu Glu Ala Lys Thr Gly Lys Leu His Gln Glu Val Asn Leu
 305 310 315 320
 Val Val Met Arg Ala Thr Gln Leu Gln Lys Asn Leu Thr Cys Glu Val
 325 330 335
 Trp Gly Pro Thr Ser Pro Lys Leu Met Leu Ser Leu Lys Leu Glu Asn
 340 345 350
 Lys Glu Ala Lys Val Ser Lys Arg Glu Lys Ala Val Trp Val Leu Asn
 355 360 365
 Pro Glu Ala Gly Met Trp Gln Cys Leu Leu Ser Asp Gly Ala Ser Gly
 370 375 380
 Asp Lys Thr His Thr Cys Pro Pro Cys Pro Ala Pro Glu Leu Leu Gly
 385 390 395 400
 Gly Pro Ser Val Phe Leu Phe Pro Pro Lys Pro Lys Asp Thr Leu Met
 405 410 415
 Ile Ser Arg Thr Pro Glu Val Thr Cys Val Val Val Asp Val Ser His
 420 425 430
 Glu Asp Pro Glu Val Lys Phe Asn Trp Tyr Val Asp Gly Val Glu Val
 435 440 445
 His Asn Ala Lys Thr Lys Pro Arg Glu Glu Gln Tyr Asn Ser Thr Tyr
 450 455 460
 Arg Val Val Ser Val Leu Thr Val Leu His Gln Asp Trp Leu Asn Gly
 465 470 475 480
 Lys Glu Tyr Lys Cys Lys Val Ser Asn Lys Ala Leu Pro Ala Pro Ile
 485 490 495
 Glu Lys Thr Ile Ser Lys Ala Lys Gly Gln Pro Arg Glu Pro Gln Val
 500 505 510
 Tyr Thr Leu Pro Pro Ser Arg Asp Glu Leu Thr Lys Asn Gln Val Ser
 515 520 525
 Leu Thr Cys Leu Val Lys Gly Phe Tyr Pro Ser Asp Ile Ala Val Glu
 530 535 540
 Trp Glu Ser Asn Gly Gln Pro Glu Asn Asn Tyr Lys Thr Thr Pro Pro
 545 550 555 560
 Val Leu Asp Ser Asp Gly Ser Phe Phe Leu Tyr Ser Lys Leu Thr Val
 565 570 575
 Asp Lys Ser Arg Trp Gln Gln Gly Asn Val Phe Ser Cys Ser Val Met
 580 585 590
 His Glu Ala Leu His Asn His Tyr Thr Gln Lys Ser Leu Ser Leu Ser

595 600 605
Pro Gly Lys
610

<210> 6
<211> 476
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic

<400> 6
Asp Tyr Gln Val Ser Ser Pro Ile Tyr Asp Ile Asn Tyr Tyr Thr Ser
1 5 10 15
Glu Pro Ser Gln Lys Ile Asn Val Lys Gln Ile Ala Ala Arg Leu Leu
20 25 30
Thr Arg Asp Tyr Gln Val Ser Ser Pro Ile Tyr Asp Ile Asn Tyr Tyr
35 40 45
Thr Ser Glu Pro Ser Gln Lys Ile Asn Val Lys Gln Ile Ala Ala Arg
50 55 60
Leu Leu Ala Ile Ala Lys Lys Val Val Leu Gly Lys Lys Gly Asp Thr
65 70 75 80
Val Glu Leu Thr Cys Thr Ala Ser Gln Lys Lys Ser Ile Gln Phe His
85 90 95
Trp Lys Asn Ser Asn Gln Ile Lys Ile Leu Gly Asn Gln Gly Ser Phe
100 105 110
Leu Thr Lys Gly Pro Ser Lys Leu Asn Asp Arg Ala Asp Ser Arg Arg
115 120 125
Ser Leu Trp Asp Gln Gly Asn Phe Pro Leu Ile Ile Lys Asn Leu Lys
130 135 140
Ile Glu Asp Ser Asp Thr Tyr Ile Cys Glu Val Glu Asp Gln Lys Glu
145 150 155 160
Glu Val Gln Leu Leu Val Phe Gly Leu Thr Ala Asn Ser Asp Thr His
165 170 175
Leu Leu Gln Gly Gln Ser Leu Thr Leu Thr Leu Glu Ser Pro Pro Gly
180 185 190
Ser Ser Pro Ser Val Gln Cys Arg Ser Pro Arg Gly Lys Asn Ile Gln
195 200 205
Gly Gly Lys Thr Leu Ser Val Ser Gln Leu Glu Leu Gln Asp Ser Gly
210 215 220
Thr Trp Thr Cys Thr Val Leu Gln Asn Gln Lys Lys Val Glu Phe Lys
225 230 235 240
Ile Asp Ile Val Val Leu Ala Ser Gly Asp Lys Thr His Thr Cys Pro
245 250 255
Pro Cys Pro Ala Pro Glu Leu Leu Gly Gly Pro Ser Val Phe Leu Phe
260 265 270
Pro Pro Lys Pro Lys Asp Thr Leu Met Ile Ser Arg Thr Pro Glu Val
275 280 285
Thr Cys Val Val Val Asp Val Ser His Glu Asp Pro Glu Val Lys Phe
290 295 300
Asn Trp Tyr Val Asp Gly Val Glu Val His Asn Ala Lys Thr Lys Pro
305 310 315 320
Arg Glu Glu Gln Tyr Asn Ser Thr Tyr Arg Val Val Ser Val Leu Thr
325 330 335
Val Leu His Gln Asp Trp Leu Asn Gly Lys Glu Tyr Lys Cys Lys Val

340	345	350	
Ser Asn Lys Ala Leu Pro Ala Pro Ile Glu Lys Thr Ile Ser Lys Ala			
355	360	365	
Lys Gly Gln Pro Arg Glu Pro Gln Val Tyr Thr Leu Pro Pro Ser Arg			
370	375	380	
Asp Glu Leu Thr Lys Asn Gln Val Ser Leu Thr Cys Leu Val Lys Gly			
385	390	395	400
Phe Tyr Pro Ser Asp Ile Ala Val Glu Trp Glu Ser Asn Gly Gln Pro			
405	410	415	
Glu Asn Asn Tyr Lys Thr Thr Pro Pro Val Leu Asp Ser Asp Gly Ser			
420	425	430	
Phe Phe Leu Tyr Ser Lys Leu Thr Val Asp Lys Ser Arg Trp Gln Gln			
435	440	445	
Gly Asn Val Phe Ser Cys Ser Val Met His Glu Ala Leu His Asn His			
450	455	460	
Tyr Thr Gln Lys Ser Leu Ser Leu Ser Pro Gly Lys			
465	470	475	

<210> 7
<211> 483
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic

<400> 7			
Asp Tyr Gln Val Ser Ser Pro Ile Tyr Asp Ile Asn Tyr Tyr Thr Ser			
1	5	10	15
Glu Pro Ser Gln Lys Ile Asn Val Lys Gln Ile Ala Ala Arg Leu Leu			
20	25	30	
Thr Arg Gly Gly Ala Ile Ala Lys Lys Val Val Leu Gly Lys Lys Gly			
35	40	45	
Asp Thr Val Glu Leu Thr Cys Thr Ala Ser Gln Lys Lys Ser Ile Gln			
50	55	60	
Phe His Trp Lys Asn Ser Asn Gln Ile Lys Ile Leu Gly Asn Gln Gly			
65	70	75	80
Ser Phe Leu Thr Lys Gly Pro Ser Lys Leu Asn Asp Arg Ala Asp Ser			
85	90	95	
Arg Arg Ser Leu Trp Asp Gln Gly Asn Phe Pro Leu Ile Ile Lys Asn			
100	105	110	
Leu Lys Ile Glu Asp Ser Asp Thr Tyr Ile Cys Glu Val Glu Asp Gln			
115	120	125	
Lys Glu Glu Val Gln Leu Leu Val Phe Gly Leu Thr Ala Asn Ser Asp			
130	135	140	
Thr His Leu Leu Gln Gly Gln Ser Leu Thr Leu Thr Leu Glu Ser Pro			
145	150	155	160
Pro Gly Ser Ser Pro Ser Val Gln Cys Arg Ser Pro Arg Gly Lys Asn			
165	170	175	
Ile Gln Gly Gly Lys Thr Leu Ser Val Ser Gln Leu Glu Leu Gln Asp			
180	185	190	
Ser Gly Thr Trp Thr Cys Thr Val Leu Gln Asn Gln Lys Lys Val Glu			
195	200	205	
Phe Lys Ile Asp Ile Val Val Leu Ala Ser Gly Asp Lys Thr His Thr			
210	215	220	
Cys Pro Pro Cys Pro Ala Pro Glu Leu Leu Gly Gly Pro Ser Val Phe			

225	230	235	240
Leu Phe Pro Pro Lys Pro Lys Asp Thr	Leu Met Ile Ser Arg Thr Pro		
245	250	255	
Glu Val Thr Cys Val Val Val Asp Val	Ser His Glu Asp Pro Glu Val		
260	265	270	
Lys Phe Asn Trp Tyr Val Asp Gly Val	Glu Val His Asn Ala Lys Thr		
275	280	285	
Lys Pro Arg Glu Glu Gln Tyr Asn Ser	Thr Tyr Arg Val Val Ser Val		
290	295	300	
Leu Thr Val Leu His Gln Asp Trp	Leu Asn Gly Lys Glu Tyr Lys Cys		
305	310	315	320
Lys Val Ser Asn Lys Ala Leu Pro	Ala Pro Ile Glu Lys Thr Ile Ser		
325	330	335	
Lys Ala Lys Gly Gln Pro Arg Glu	Pro Gln Val Tyr Thr Leu Pro Pro		
340	345	350	
Ser Arg Asp Glu Leu Thr Lys Asn	Gln Val Ser Leu Thr Cys Leu Val		
355	360	365	
Lys Gly Phe Tyr Pro Ser Asp	Ile Ala Val Glu Trp Glu Ser Asn Gly		
370	375	380	
Gln Pro Glu Asn Asn Tyr	Lys Thr Thr Pro Pro Val Leu Asp Ser Asp		
385	390	395	400
Gly Ser Phe Phe Leu Tyr Ser Lys	Leu Thr Val Asp Lys Ser Arg Trp		
405	410	415	
Gln Gln Gly Asn Val Phe Ser Cys	Ser Val Met His Glu Ala Leu His		
420	425	430	
Asn His Tyr Thr Gln Lys Ser	Leu Ser Leu Ser Pro Gly Lys Ala Ser		
435	440	445	
Ala Asp Tyr Gln Val Ser Ser	Pro Ile Tyr Asp Ile Asn Tyr Tyr Thr		
450	455	460	
Ser Glu Pro Ser Gln Lys Ile Asn Val	Lys Gln Ile Ala Ala Arg Leu		
465	470	475	480
Leu Ser Arg			

<210> 8
<211> 453
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic

<400> 8
Arg Ser Thr Arg Gly Gly Ala Ile Ala Lys Lys Val Val Leu Gly Lys
1 5 10 15
Lys Gly Asp Thr Val Glu Leu Thr Cys Thr Ala Ser Gln Lys Lys Ser
20 25 30
Ile Gln Phe His Trp Lys Asn Ser Asn Gln Ile Lys Ile Leu Gly Asn
35 40 45
Gln Gly Ser Phe Leu Thr Lys Gly Pro Ser Lys Leu Asn Asp Arg Ala
50 55 60
Asp Ser Arg Arg Ser Leu Trp Asp Gln Gly Asn Phe Pro Leu Ile Ile
65 70 75 80
Lys Asn Leu Lys Ile Glu Asp Ser Asp Thr Tyr Ile Cys Glu Val Glu
85 90 95
Asp Gln Lys Glu Glu Val Gln Leu Leu Val Phe Gly Leu Thr Ala Asn

100	105	110
Ser Asp Thr His Leu Leu Gln	Gly Gln Ser	Leu Thr Leu Thr Leu Glu
115	120	125
Ser Pro Pro Gly Ser Ser Pro	Ser Val Gln Cys Arg Ser	Pro Arg Gly
130	135	140
Lys Asn Ile Gln Gly Gly	Lys Thr Leu Ser Val	Gln Leu Glu Leu
145	150	155
Gln Asp Ser Gly Thr Trp Thr Cys Thr Val	Leu Gln Asn Gln Lys	Lys
165	170	175
Val Glu Phe Lys Ile Asp Ile Val Val	Leu Ala Ser Gly Asp	Lys Thr
180	185	190
His Thr Cys Pro Pro Cys Pro Ala Pro	Glu Leu Leu Gly Gly	Pro Ser
195	200	205
Val Phe Leu Phe Pro Pro Lys Pro	Lys Asp Thr Leu Met	Ile Ser Arg
210	215	220
Thr Pro Glu Val Thr Cys Val Val Val	Asp Val Ser His	Glu Asp Pro
225	230	235
Glu Val Lys Phe Asn Trp Tyr Val Asp	Gly Val Glu Val His	Asn Ala
245	250	255
Lys Thr Lys Pro Arg Glu Glu Gln	Tyr Asn Ser Thr Tyr Arg	Val Val
260	265	270
Ser Val Leu Thr Val Leu His Gln	Asp Trp Leu Asn Gly	Lys Glu Tyr
275	280	285
Lys Cys Lys Val Ser Asn Lys Ala	Leu Pro Ala Pro Ile Glu Lys	Thr
290	295	300
Ile Ser Lys Ala Lys Gly Gln	Pro Arg Glu Pro Gln Val	Tyr Thr Leu
305	310	315
Pro Pro Ser Arg Asp Glu Leu Thr Lys	Asn Gln Val Ser	Leu Thr Cys
325	330	335
Leu Val Lys Phe Tyr Pro Ser Asp	Ile Ala Val Glu Trp Glu	Ser
340	345	350
Asn Gly Gln Pro Glu Asn Asn	Tyr Lys Thr Thr Pro	Pro Val Leu Asp
355	360	365
Ser Asp Gly Ser Phe Phe Leu Tyr	Ser Lys Leu Thr Val Asp	Lys Ser
370	375	380
Arg Trp Gln Gln Gly Asn Val	Phe Ser Cys Ser Val Met	His Glu Ala
385	390	395
Leu His Asn His Tyr Thr Gln	Lys Ser Leu Ser Leu Ser	Pro Gly Lys
405	410	415
Ala Ser Ala Asp Tyr Gln Val	Ser Ser Pro Ile Tyr Asp	Ile Asn Tyr
420	425	430
Tyr Thr Ser Glu Pro Ser Gln	Lys Ile Asn Val Lys Gln	Ile Ala Ala
435	440	445
Arg Leu Leu Ser Arg		
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 <213> Artificial Sequence

<220>
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				20				25					30		
Thr	Arg	Gly	Gly	Ala	Ile	Ala	Lys	Lys	Val	Val	Leu	Gly	Lys	Lys	Gly
				35				40				45			
Asp	Thr	Val	Glu	Leu	Thr	Cys	Thr	Ala	Ser	Gln	Lys	Lys	Ser	Ile	Gln
				50				55			60				
Phe	His	Trp	Lys	Asn	Ser	Asn	Gln	Ile	Lys	Ile	Leu	Gly	Asn	Gln	Gly
				65				70			75		80		
Ser	Phe	Leu	Thr	Lys	Gly	Pro	Ser	Lys	Leu	Asn	Asp	Arg	Ala	Asp	Ser
				85				90				95			
Arg	Arg	Ser	Leu	Trp	Asp	Gln	Gly	Asn	Phe	Pro	Leu	Ile	Ile	Lys	Asn
				100				105				110			
Leu	Lys	Ile	Glu	Asp	Ser	Asp	Thr	Tyr	Ile	Cys	Glu	Val	Glu	Asp	Gln
				115				120			125				
Lys	Glu	Glu	Val	Gln	Leu	Leu	Val	Phe	Gly	Leu	Thr	Ala	Asn	Ser	Asp
				130				135			140				
Thr	His	Leu	Leu	Gln	Gly	Gln	Ser	Leu	Thr	Leu	Thr	Leu	Glu	Ser	Pro
				145				150			155		160		
Pro	Gly	Ser	Ser	Pro	Ser	Val	Gln	Cys	Arg	Ser	Pro	Arg	Gly	Lys	Asn
				165				170			175				
Ile	Gln	Gly	Gly	Lys	Thr	Leu	Ser	Val	Ser	Gln	Leu	Glu	Leu	Gln	Asp
				180				185			190				
Ser	Gly	Thr	Trp	Thr	Cys	Thr	Val	Leu	Gln	Asn	Gln	Lys	Lys	Val	Glu
				195				200			205				
Phe	Lys	Ile	Asp	Ile	Val	Val	Leu	Ala	Ser	Gly	Asp	Lys	Thr	His	Thr
				210				215			220				
Cys	Pro	Pro	Cys	Pro	Ala	Pro	Glu	Leu	Leu	Gly	Gly	Pro	Ser	Val	Phe
				225				230			235		240		
Leu	Phe	Pro	Pro	Lys	Pro	Lys	Asp	Thr	Leu	Met	Ile	Ser	Arg	Thr	Pro
				245				250			255				
Glu	Val	Thr	Cys	Val	Val	Val	Asp	Val	Ser	His	Glu	Asp	Pro	Glu	Val
				260				265			270				
Lys	Phe	Asn	Trp	Tyr	Val	Asp	Gly	Val	Glu	Val	His	Asn	Ala	Lys	Thr
				275				280			285				
Lys	Pro	Arg	Glu	Glu	Gln	Tyr	Asn	Ser	Thr	Tyr	Arg	Val	Val	Ser	Val
				290				295			300				
Leu	Thr	Val	Leu	His	Gln	Asp	Trp	Leu	Asn	Gly	Lys	Glu	Tyr	Lys	Cys
				305				310			315		320		
Lys	Val	Ser	Asn	Lys	Ala	Leu	Pro	Ala	Pro	Ile	Glu	Lys	Thr	Ile	Ser
				325				330			335				
Lys	Ala	Lys	Gly	Gln	Pro	Arg	Glu	Pro	Gln	Val	Tyr	Thr	Leu	Pro	Pro
				340				345			350				
Ser	Arg	Asp	Glu	Leu	Thr	Lys	Asn	Gln	Val	Ser	Leu	Thr	Cys	Leu	Val
				355				360			365				
Lys	Gly	Phe	Tyr	Pro	Ser	Asp	Ile	Ala	Val	Glu	Trp	Glu	Ser	Asn	Gly
				370				375			380				
Gln	Pro	Glu	Asn	Asn	Tyr	Lys	Thr	Thr	Pro	Pro	Val	Leu	Asp	Ser	Asp
				385				390			395		400		
Gly	Ser	Phe	Phe	Leu	Tyr	Ser	Lys	Leu	Thr	Val	Asp	Lys	Ser	Arg	Trp
				405				410			415				
Gln	Gln	Gly	Asn	Val	Phe	Ser	Cys	Ser	Val	Met	His	Glu	Ala	Leu	His
				420				425			430				
Asn	His	Tyr	Thr	Gln	Lys	Ser	Leu	Ser	Leu	Ser	Pro	Gly	Lys		
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<212> DNA
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<220>
<223> Primer

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<220>
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<212> DNA
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<220>
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c 61
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